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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/686,457 | 10/15/2003 | Mark A. Pyle | 88-2057A | 7798 |

24114 7590 12/13/2005

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| EXAMINER |
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PRICE, CRAIG JAMES

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| ART UNIT | PAPER NUMBER |
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3753

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/686,457 | Applicant(s) PYLE ET AL. | |
| | Examiner Craig Price | Art Unit 3753 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003 and 12 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 1-4 appear that they should be designated by a legend such as --Prior Art-- because only that which is old is illustrated and as recorded in page 3, lines 9-15, "a typical", is understood as prior art. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's prior art, i.e. APA in view of Laverman et al. (5,147,418), Lievens et al. (5,220,799) and Coolidge (5,372,497).

Regarding claims 1-10, APA discloses in the description of the prior art, a method for removing an oxidizable liquid and related liquid vapor from a storage tank having a closed interior defined by at least one upstanding wall (4) having an exterior (14) side and an interior side (13), a bottom (2), and an open top (5) opposing the bottom, the open top being fitted with a floatable roof (6) that is slidingly sealed to the interior the to keep the vapor from escaping to the ambient atmosphere outside the tank interior, the roof carrying a plurality of support legs (20) that extend essentially equidistantly into the tank interior which legs stop the roof and hold it stationery a finite distance (page 1, Lns. 23-24) apart from the bottom thereby leaving liquid and related vapor remaining between the stationery floating roof and the bottom, the floating roof carrying at least two vents (25) which are in fluid communication between the tank interior that remains under the stationery floating roof and the ambient atmosphere, the pressure in the interior of the tank is measured during the liquid and vapor removal

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steps after the roof has become stationery in (page 1,Lns. 10 – 30 onto page 2,Lns. 19), and at least one of the vents is opened to the ambient atmosphere if a predetermined over pressure or vacuum level is reached in the interior during the removal steps in (page 2,Lns. 3-6 of the specification), the liquid is hydro carbonaceous in (page 2,Lns. 12-15 of the specification),in which by definition of hydrocarbonaceous, any numerous organic compound that contain only carbon and hydrogen, is a liquid contains hydrocarbon molecules having up to 12 carbon atoms per molecule and also in which a liquid is gasoline, the tank walls and roof are curvilinear in configuration in (page 4,Lns. 2-4 of the specification) and in the apparent prior art of Figure 1,and the roof becomes stationery at a distance of at least about 7 feet from the bottom in (page 1,Lns. 23-24 of the specification).

APA lacks the improvement comprising a method of removing essentially all the remaining liquid from the tank interior under the stationery roof without creating a vacuum within the interior while removing the related vapor from the interior with minimal emissions to the ambient atmosphere comprising the steps of removing from the interior the remaining liquid, removing from the interior the vapor through at least one of the vents, the vapor removal being effected in a contained manner, transporting the contained vapor to at least one thermal oxidizer, oxidizing the contained vapor to a substantial extent in the at least one oxidizer, emitting to the ambient atmosphere the exhaust of the at least one oxidizer, introducing through at least one other of the vents at least one inert gas in an amount sufficient to maintain a gaseous pressure between the stationery roof and the liquid in the tank sufficient to prevent the formation of a

vacuum in the tank interior as the liquid is removed there from while the floating roof remains stationery, whereby the tank is emptied of essentially all its liquid content without appreciable loss of related vapor to the ambient atmosphere, and without damage to the tank and also lacks wherein the liquid removal, the vapor removal, and the inert gas introduction are carried out essentially contemporaneously.

Laverman et al. disclose in claim 1 (Col. 11, Lns.25-26),” a method of abating emissions from a volatile liquid in an above ground storage tank”, and teach the use of an oxidizer/abatement apparatus (62,64,66,68,70) while removing vapor from a storage tank containing a floating roof as shown in Figure 5 and in (Col.10, Lns.7–28). Livens et al. disclose a method of providing a source of inert gas into, “the head space of the gasoline storage tank to displace liquid gasoline as it is pumped from the tank to the individual automobiles”, (Col.2, Lns.63-68), and also disclose “where the predetermined value of the pressure within the head space of the storage tank is chosen to be slightly above ambient atmospheric pressure”, in (Col.4,Lns.57-60). Coolidge discloses oxidizing fuel vapor with an inert gas in a combustion chamber (Col.2, Lns. 65 through Col.3, Lns. 42,Col. 8,Lns. 65-68).

In view of the patent of Laverman et al., it would have been obvious to one of ordinary skill in the art at the time of invention to utilize the oxidizer/ emission abatement apparatus of Laverman et al. into the system of APA, to have a method of removing essentially all the remaining liquid from the tank interior under the stationery roof without creating a vacuum within the interior while removing the related vapor from the interior with minimal emissions to the ambient atmosphere comprising the steps of removing

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from the interior the remaining liquid, removing from the interior the vapor through at least one of the vents, the vapor removal being effected in a contained manner, transporting the contained vapor to at least one thermal oxidizer, oxidizing the contained vapor to a substantial extent in the at least one oxidizer, emitting to the ambient atmosphere the exhaust of the at least one oxidizer, whereby the tank is emptied of essentially all its liquid content without appreciable loss of related vapor to the ambient atmosphere in order to provide an exhaust of minimal emissions through the use of the oxidizer/abatement system.

In view of the patent of Lievens et al. and Coolidge, it would have been obvious to one of ordinary skill in the art at the time of invention to utilize the method for supplying a source of inert gas into a storage tank of APA, to have a method of removing essentially all the remaining liquid from the tank interior under the stationery roof without creating a vacuum within the interior, introducing through at least one other of the vents at least one inert gas in an amount sufficient to maintain a gaseous pressure between the stationery roof and the liquid in the tank sufficient to prevent the formation of a vacuum in the tank interior as the liquid is removed there from while the floating roof remains stationery, and without damage to the tank, wherein the liquid removal, the vapor removal, and the inert gas introduction are carried out essentially contemporaneously, in order enhance safety by providing an internal pressure which would keep the walls of the tank from collapsing. *and to minimize the possibility of explosion and fire.*

Regarding claims 7 and 8, APA discloses that, "such oxidizers are well known in the art", and that "combustion efficiencies can readily reach 98%", and "the exhaust of

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this engine is primarily water and carbon dioxide", in (page 9 lines 1-7 of the specification). In view of Laverman et al. and APA, an artisan skilled in the art at the time of invention would have selected a suitable oxidizer in which the prior art oxidizer disclosed by the applicant is included in order to provide an oxidizer/abatement system which would yield minimal exhaust fumes while maintaining a low operating cost and in order to utilize an oxidizer available in the market place.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Willenborg (2,049,987), Lee (3,329,301), Nelson (Re.29, 270), Kern (4,244,487), Griffin (1,596,526), Szasz (3,910,452) and Kramer (1,979,272) all disclose similar storage tanks and systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Price whose telephone number is (571) 272-2712. The examiner can normally be reached on 8AM - 5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Blau can be reached on (571) 272-4406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CP



December 7, 2005



STEPHEN BLAU
PRIMARY EXAMINER